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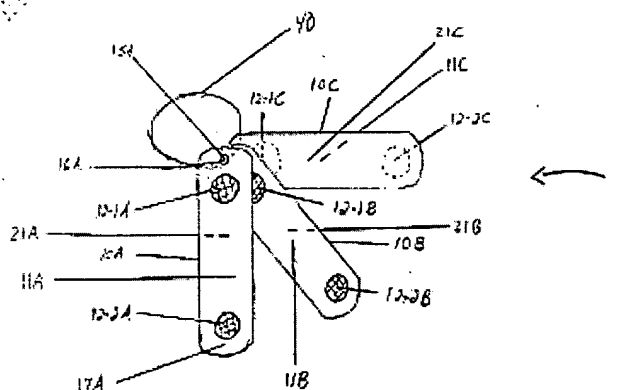
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The invention provides a versatile magnetic holder which is capable of holding objects which are sensitive to magnetic fields, such as ferrous coins, capable of holding items comprising an enclosed loop, such as key chains, and capable of holding thin articles, such as paper currency, which can be held between two adjacent flat elements pressing against one another. The magnetic holder is also capable of securing larger objects against a ferrous portion of another object. The apparatus comprises three longitudinal flat members, each member comprising two magnets protruding from one face, linked through one another via a loop-shaped element extending through a hole positioned at an extremity of each longitudinal member. For maximum versatility, when all three longitudinal members are magnetically secured to one another, the top face of two of the longitudinal members faces in opposite direction to the front face of the third longitudinal member.



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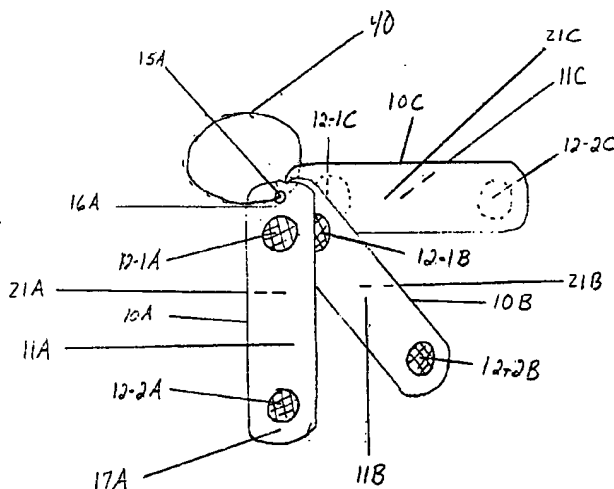
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[Continued on next page]



(57) Abstract: The invention provides a versatile magnetic holder which is capable of holding objects which are sensitive to magnetic fields, such as ferrous coins, capable of holding items comprising an enclosed loop, such as key chains, and capable of holding thin articles, such as paper currency, which can be held between two adjacent flat elements pressing against one another. The magnetic holder is also capable of securing larger objects against a ferrous portion of another object. The apparatus comprises three longitudinal flat members, each member comprising two magnets protruding from one face, linked through one another via a loop-shaped element extending through a hole positioned at an extremity of each longitudinal member. For maximum versatility, when all three longitudinal members are magnetically secured to one another, the top face of two of the longitudinal members faces in opposite direction to the front face of the third longitudinal member.

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VERSATILE MAGNETIC HOLDER

Field of the Invention

5 This invention relates to an apparatus for holding small items and for assisting in holding, in whole or in part, items against magnetic surfaces. The apparatus has specific application to holding personal objects of the type that a person might carry in a pocket such as magnetic coins, paper or plastic currency, keys, smart cards and the
10 like. The apparatus has also specific application to removably holding a protective article, such as a tarpaulin drop sheet or the like, against a magnetic object, such as a vehicle.

Background

15 Various types of devices exist for holding miscellaneous personal objects such as currency, keys, access cards, and the like which are typically carried by individuals. Some such devices include a magnet. Magnetic items such as magnetic coins are attracted to the magnet and
20 can be held to the magnet. One example of a magnetic holder is described in U.S. patent No. 5,388,439 (Miller). A magnetic holder is not useful for holding non-magnetic items such as non-magnetic coins, paper currency or the like.

25 Another type of holding device comprises a member, typically a loop, onto which can be fastened apertured objects such as keys. A standard key ring is an example of such a device. Examples of such devices are disclosed in Canadian patent No. 2,188,119 (MacLeod), Canadian patent No. 1,333,272 (Tsamas) and Canadian patent No.
30 2,035,560 (Scungio). This type of device is not useful for holding items, such as money, which are not apertured.

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A further type of holding device comprises a pair of adjacent elements which are biased together with sufficient force to enable objects, such as paper currency, identification cards and the like to be removably secured. A standard money clip is an example of such a device. Another example of a device in which objects can be gripped between adjacent surfaces is described in U.K. patent 2,138,281 (Huang), where coins and paper currency can be held between adjacent coils of a spiral.

10 There is a need for a versatile, convenient to carry, apparatus capable of removably securing personal objects. There is also a need for an apparatus capable of securing larger objects against a magnetic portion of another object.

15 Summary of Invention

 This invention provides a versatile magnetic holder, comprising three longitudinal magnetic members each comprising a magnetizable material. Each magnetic member comprises an aperture through which a loop-shaped element can extend, positioned in an end portion of the magnetic member, and two ferromagnetic elements on the magnetic member. The ferromagnetic elements are preferably rare-earth magnets.

25 The magnetic holder may comprise an aligning member, such as a key ring or a flexible strap, extending through the apertures of the magnetic members.

 The ferromagnetic elements are arranged so that the poles of ferromagnetic elements on adjacent magnetic members attract one

- 3 -

another, so that the three magnetic members are magnetically secured to one another.

5 The three magnetic members are preferably arranged with respect to one another so that, when they are magnetically secured to one another, the front faces of two of the magnetic members face in one direction while the front face of a third magnetic member faces in an opposite direction. The front face of each of the magnetic members may comprise a spacer. Alternatively, the ferromagnetic elements may
10 project from the front face of each of the magnetic members to serve as spacers.

Preferably, the ferromagnetic elements are curved along their longitudinal axis, with their back sides being convex.
15

This invention also provides a method for simultaneously holding small magnetic objects such as coins, loop shaped elements and thin articles. The method comprises providing a holder, as outlined above. The method further comprises inserting one or more thin articles
20 between the back side of one magnetic member and the back side of another magnetic member. The method further comprises magnetically securing a magnetic object to any one of the ferromagnetic elements. The method further comprises inserting a loop shaped element in gaps formed by the holder. A gap is formed when two ferromagnetic
25 elements (or other spaces) projecting from the front face of one magnetic member are magnetically secured to the back side of another magnetic member. A gap is also formed when two ferromagnetic elements projecting from the front face of one magnetic member are magnetically secured to two ferromagnetic elements projecting from the
30 front face of another magnetic member.

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Further features and advantages of the invention are described below.

Brief Description of the Drawings

5

In drawings which illustrate non-limiting embodiments of the invention:

Figure 1 is a schematic top view of a magnetic holder according to a preferred embodiment of the invention;

10 Figure 2 is a schematic side view of the magnetic holder of Figure 1;

Figures 3 and 4 show a schematic side view of alternate arrangements of individual parts of the holder according to the currently preferred embodiment of the invention;

15 Figure 5 is a schematic side view of a preferred arrangement of poles of each magnet of the magnetic holder of Figure 1; and

Figure 6 is a schematic view along line 6-6 of Figure 5.

Detailed Description

20

As required, detailed embodiments of the present invention are disclosed herein. However, it is to be understood that the disclosed embodiments are merely exemplary of the invention, which may be embodied in various forms. Therefore, specific structural and
25 functional details disclosed herein are not to be determined as limiting, but merely as a basis for the claims and a representative basis for teaching one skilled in the art to variously employ the present invention in virtually any appropriately detailed structure.

30 This invention provides a versatile holder for holding items such as coins, paper currency, keys, smart cards, and the like. A preferred

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embodiment of the invention comprises a number of generally flat magnetic plates. The plates are attracted to one another by magnetic forces so that paper currency or other thin objects can be held between a pair of adjacent plates. Magnetic items such as ferromagnetic coins are held to the holder by magnetic attraction to the plates. Most preferably the plates are all mounted on a connecting member, such as a ring, which passes through apertures in end portions of the plates. Objects such as keys or smart cards may also be held to the connecting member. Thus a holder according to the invention can conveniently accommodate a wide range of small objects of types that an individual might carry in his or her pockets.

As shown in Figures 1 and 2, a holder 1 according to a currently preferred embodiment of the invention, comprises three generally flat elongated ferrous members 10. Members 10 include a first flat member 10A, a second flat member 10B and a third flat member 10C. In the preferred embodiment, each flat member 10 is made of 18 gage cold rolled steel. Members 10 are preferably stiff. Where the members are fabricated from 18 gauge steel, they are preferably slightly curved or slightly bent about a longitudinal axis, as shown for example in Figure 6, to provide added stiffness. Magnetizable materials other than steel may also be used for members 10. Each of members 10 preferably has suitable dimensions to fit into a user's pocket. To be pocket size, holder 1 should not be longer than about 100mm and is preferably $\frac{1}{2}$ this size. For example, in the preferred embodiment, each member 10 is approximately 15mm wide, 50mm long and 1mm thick. Preferably, each end of each flat member is rounded so that members 10 have no sharp corners.

One end portion 16 of each member 10, includes an aperture 15 through which an aligning member, such as a ring or flexible strap, can

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extend. In the preferred embodiment, the aligning member comprises a ring 40. Ring 40 is preferably a ring such as a key ring onto which additional things such as keys, bar-coded identification tags, tags bearing advertisements, smart cards or the like can be added. Aligning member 40 keeps end portions 16 of members 10 generally aligned with one another and keeps members 10 together.

Each of members 10 has a front face 11 and a back side 21. In the preferred embodiment, back side 21 is slightly convex as shown in Figure 6. Two ferromagnetic elements 12 are mounted to the front face 11. On each member 10, one magnetic element 12-1 is secured near a first, proximal, end 16 and a second magnetic element 12-2 is secured near a second, distal, end 17, of magnetic member 10. Magnetic elements 12-1 and 12-2 are preferably spaced apart from one another by the same amount on each of members 10. In the preferred embodiment, each pair of ferromagnetic elements (i.e. ferromagnetic elements 12-1A and 12-2A, ferromagnetic elements 12-1B and 12-2B and ferromagnetic elements 12-1C and 12-2C) are spaced apart from one another by a distance of approximately 30mm. Magnetic elements 12 project slightly from front face 11. Ferromagnetic elements 12 may be held in place on face 11 mechanically or may be held in place using a suitable adhesive. In the preferred embodiment, ferromagnetic elements 12 each comprise a rare earth permanent magnet. Such magnets produce magnetic fields which are strong in relation to the size and weight of the magnet. Other strong magnets could also be used for ferromagnetic elements 12.

Ferromagnetic elements 12 tend to cause holder 1 to adopt a configuration in which each ferromagnetic element 12 is aligned with a corresponding ferromagnetic element on an adjacent member 10. This configuration is shown in Figure 2. A user can slide members 10 apart into a fan configuration as shown in Figure 1.

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Figure 5 shows a preferred arrangement of magnetic poles, where N indicates a north magnetic pole and S indicates a south magnetic pole, for each of magnetic elements 12-1 and 12-2 of magnetic holder 1. This arrangement creates optimal attractive forces between flat members 5 10A, 10B and 10C, because opposite poles are adjacent to one another (for example north magnetic pole N of magnet 12-2B is adjacent to south magnetic pole S of magnet 12-2A). In the preferred embodiment, the poles of all of the ferromagnetic elements 12 on a member 10 face in the same direction. However, any arrangement of the magnets which 10 preserves this concept of adjacent distribution of opposite poles is possible within the broad scope of this invention.

According to a preferred embodiment of the invention, as shown in Figure 2, faces 11 of two adjacent ones of members 10 face one 15 direction (in the illustrated embodiment members 10A and 10B have their faces, 11A and 11B, facing one direction). The third member 10C has its face 11C oriented in a direction opposite to that of faces 11A and 11B of the other two members 10. With this construction, front faces 11 (i.e. 11A and 11B) of two flat members 10A and 10B face one way 20 and the front face 11 (i.e. 11CB) of the third flat member 10C faces the opposite way.

More specifically, Figure 2 shows a first flat member 10A positioned on top of the other two flat members (10B and 10C) in holder 25 1, with its front side 11A and magnetic elements 12-1A and 12-2A facing upwards. Second flat member 10B is positioned under first flat member 10A with its front side 11B and magnetic elements 12-1B and 12-2B also facing upwards i.e. front side 11B faces back side 21A of first flat member 10A. As a result, both ferromagnetic elements 12-1B 30 and 12-2B of second member 10B are magnetically secured to back side 21A of first flat member 10A. Third flat member 10C is positioned

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under second flat member 10B, with its front face 11C facing down.
As a result, back sides 21B and 21C of members 10B and 10C are
adjacent to one another and are magnetically attracted to one another by
the magnetic forces of the ferromagnetic elements 12 on each of
5 members 10.

The convex rear sides 21 of members 10 facilitate separating
adjacent members 10 by sliding distal end 17 of one member 10
transversely relative to distal end 17 of adjacent member 10, so that first
10 end 16 pivots about ring 40.

Magnetic holder 1 may be used as follows. Ferromagnetic
elements 12 on members 10A and 10C (i.e. ferromagnetic elements 12-
1A, 12-2A, 12-1C and 12-2C) face outward and will therefore
15 constitute the point of contact with any ferrous material which is brought
into close vicinity of holder 1. For example, any ferrous coins in
proximity of magnetic holder 1 are magnetically attracted to and attach
to the outwardly facing magnetic elements 12-1A, 12-2A, 12-1C and
12-2C, on members 10A and 10C. A user could for example, place
20 holder 1 into a pocket containing various magnetic coins and the coins
would become attached magnetically to holder 1.

Since holder 1 is magnetic it can be attached to any object of
magnetic material. For example, holder 1 can be magnetically secured
25 to a large ferrous object, such as a refrigerator door or tool box by
placing one of the sets of outwardly facing magnetic elements (for
example 12-1A and 12-2A) against the object. The remaining pair of
outwardly facing magnetic elements (for example 12-1C and 12-2C) can
magnetically hold directly small magnetic objects. Therefore, one
30 aspect of magnetic holder 1 is that it comprises magnetic elements which
cause it to attract, or be attracted to, magnetic objects. A user could,

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for example, keep keys on ring 40 and store the keys conveniently by placing holder 1 on a refrigerator door.

Various contact areas 30 lie between adjacent members 10. One
5 contact area 30-1 is formed by a pair of magnetic elements 12-1 and 12-2 coming in contact with the back side 21 of a member 10 (for example, as shown in Figure 2, contact area 30-1AB formed by magnetic elements 12-1B and 12-2B coming in contact with back side 21A of member 10A). Another contact area 30-2 is formed by a pair of
10 magnetic elements 12-1 and 12-2 coming in contact with another pair of magnetic elements 12-1 and 12-2 (for example, as shown in Figures 3 and 4, contact area 30-2AC formed by magnetic elements 12-1C and 12-2C of member 10C coming in contact magnetic elements 12-1A and 12-2A of member 10A). Another contact area 30-3 is formed by the
15 back side 21 of a member 10 coming in contact with the back side 21 of another member 10 (for example, as shown in Figure 4, contact area 30-3BC formed by back side 21B of member 10B coming in contact with back side 21C of member 10C).

20 In the preferred embodiment of the invention there are two contact areas 30 which lie between adjacent members 10. Between members 10B and 10C is a first area 30-3BC. Since members 10B and 10C are magnetically attracted to one another, an object placed in or passing through area 30-3BC will tend to be pinched between members
25 10B and 10C. For example, paper currency or identification cards can be inserted between back sides 21B and 21C of members 10B and 10C and retained by the forces attracting member 10B to member 10C. Because of the presence of magnetic fields, cards adversely affected by such fields should not be used with magnetic holder 1 (magnetically
30 encoded credit cards would therefore not be good candidates to be

- 10 -

secured within magnetic holder 1). However, any other thin object may be held by magnetic holder 1, between flat members 10B and 10C.

5 A second contact area 30-1AB capable of holding thin objects is located between first member 10A and second member 10B. Note that contact area 30-1AB distally located from apertures 15 is more easily accessible.

10 Because magnetic elements 12 project slightly from the front faces 11 of the members 10, where two members 10 are adjacent to one another with the front face 11 of one member 10 against the back side 21 of another member 10, an elongated closed gap 31 exists between the members 10. Objects can be held to holder 1 by separating the adjacent members 10 placing the objects through the gap 31 and allowing
15 members 10 to become magnetically secured to one another with the object passing through gap 31. Objects comprising rings, loops, closed straps or the like can be affixed to holder 1 in this manner. Conversely, holder 1 can be secured to an object which includes a loop element such as a belt loop on a user's pants.

20

Gap 31 could also be formed between spacers which project from a member 10 and be provided in addition to ferromagnetic elements 12.

25 In the preferred embodiment, there is at least one gap 31AB between member 10A and member 10B.

As noted above, objects can also be fixed in any conventional manner to aligning member, such as ring 40. Ring 40 or an alternative aligning member could also be used to secure holder 1 to a loop such as
30 a belt loop on a user's pants, another key ring, or the like.

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Preferably, the aligning member allows members **10** to be repositioned with respect to one another. More specifically, ring **40** or an alternative aligning member preferably allows a user to selectively position second flat member **10B** either in between members **10A** and **10C** (i.e. as shown in Figure 2) or at either ends of the trio of members **10A**, **10B** and **10C** (i.e. on the bottom as shown in Figure 3 or on top as shown in Figure 4).

In the configuration of Figure 3, there are no outwardly facing magnetic elements **12**. Thus, in this configuration holder **1** generates less in the way of stray magnetic fields, but forms two closed gaps **31AB** and **31AC** instead of just one (as in the configuration shown in Figures 1 and 2). Consequently, in this configuration, holder **1** is less able to attract and hold small magnetic objects and less able to hold itself to a larger magnetic object.

In the configuration of Figure 4, there are only two outwardly facing magnetic elements **12** (as opposed to four in the configuration shown in Figures 1 and 2). However, holder **1** provides a larger closed gap **31AC** (as opposed to the smaller closed gap **31-AB** provided in the preferred embodiment of Figures 1 and 2) for holding loop-type objects. Consequently, in this configuration, holder **1** is less able to attract and hold small magnetic objects and less flexible in holding itself to a larger magnetic object.

25

Conversely, the magnets which create closed gap **31AC** (i.e. magnets **12-1A** and **12-1C** on one end and magnets **12-2A** and **12-2C** on the other) can strongly grip most material passing through area **30-2AC**, while the remaining two magnets (i.e. magnets **12-1B** and **12-2B**) can attach the holder, and by extension said material, to any ferrous object. Such configuration could therefore be used to hold an edge of a

30

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covering sheet, such as a car cover sheet, against a ferrous portion of an object to be covered, such as a vehicle's bumper. More specifically, the car cover sheet would be held via area 30-2AC, with holder 1 being held on the vehicle's bumper via magnets 12-1B and 12-2B. In this
5 respect, holder 1 can be used to secure edges of a tarpaulin against a car/truck's metal parts, edges of a cover sheet against a boat's metal parts etc.

Pursuant to this invention, it is possible for a holder to include
10 only 2 (instead of three) members 10. However, this is not preferred as a holder including only 2 members 10 would not be able to provide, at the same time, closed gaps, adjacent pinching faces and outwardly facing magnets. Consequently, a holder including only 2 members 10 would not be as flexible in terms of options offered to a user.

15

Also, members 10 may be made of non magnetizable material, which is not preferred as this would reduce the magnetic force keeping all members 10 magnetically secured to one another. However, such a disadvantage could be remedied by using stronger ferromagnetic
20 elements 12.

As will be apparent to those skilled in the art in the light of the foregoing disclosure, many alterations and modifications are possible in the practice of this invention without departing from the spirit or scope
25 thereof. For example:

- embodiments of the invention may provide four or more members 10;
- it is possible to have members 10 further slightly curved or slightly bent about a longitudinal axis and along the length of
30 members 10 (as opposed to along the width of members 10, as

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shown in Figure 6), with the ferromagnetic elements still sitting in members 10's concave portion;

- magnetic elements 12 may be embedded in members 10 instead of being surface-mounted, as described above; and
- 5 • in cases where a user is more interested in holder 1's ability to secure larger objects against a ferrous portion of another object and less in its ability to removably secure personal objects, the size of each flat member 10, and consequently of each ferromagnetic element 12, could be increased so as to no longer comfortably fit inside a typical clothing pocket but provide increased magnetic strength in securing larger objects against a ferrous portion of another object.

10 Accordingly, the scope of the invention is to be construed in accordance with the substance defined by the following claims.

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WHAT IS CLAIMED IS:

1. A versatile magnetic holder, comprising three longitudinal magnetic members each comprising a magnetizable material,
5 wherein each magnetic member comprises:
 - (a) an aperture through which a loop-shaped element can extend, positioned in an end portion of the magnetic member; and,
 - (b) two ferromagnetic elements on the magnetic member.
- 10 2. A versatile magnetic holder, as recited in claim 1, wherein the ferromagnetic elements comprise rare-earth magnets.
- 15 3. A versatile magnetic holder, as recited in claim 1 or 2, comprising an aligning member extending through the aperture of each magnetic member.
- 20 4. A versatile magnetic holder, as recited in claim 3, wherein the aligning member comprises a ring.
5. A versatile magnetic holder, as recited in claim 3, wherein the aligning member comprises a key ring.
- 25 6. A versatile magnetic holder, as recited in claim 3, wherein the aligning member comprises a flexible strap.
7. A versatile magnetic holder, as recited in claim 3, wherein
 - (a) the ferromagnetic elements project from a front face of each magnetic member,
 - 30 (b) each magnetic member is removably secured to the aligning member; and,

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5 (c) the magnetic members are arranged with respect to one another so that, when the three magnetic members are magnetically secured to one another, the front faces of two of the magnetic members face in one direction while the front face of a third magnetic member faces in an opposite direction.

10 8. A versatile magnetic holder according to any of the above claims wherein a front face of each of the magnetic members comprises a spacer.

9. The versatile magnetic holder of claim 8 wherein the ferromagnetic elements project from the front face to serve as the spacer.

15 10. The versatile magnetic holder of any of the above claims wherein:
a) each of the ferromagnetic elements has a north magnetic pole and a south magnetic pole, and
b) each ferromagnetic element is arranged so that, when the three magnetic members are magnetically secured to one another, the
20 poles of two closely adjacent faces of ferromagnetic elements attract one another.

25 11. The versatile magnetic holder of any of the above claims wherein at least one ferromagnetic element is curved along its longitudinal axis.

12. The versatile magnetic holder of any of the above claims wherein at least one ferromagnetic element has a convex back side.

30 13. A versatile magnetic holder, comprising:
(a) a ring;

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- (b) three longitudinal magnetic members, each magnetic member comprising an aperture, positioned at one extremity of the magnetic member, through which the ring can extend;
- 5 (c) two ferromagnetic elements projecting from a front face of each magnetic member;

wherein the magnetic members are secured to the ring by having the ring extend through the aperture of each magnetic member, and

wherein, when the magnetic members are secured to the ring:

- 10 - the front faces of two of the magnetic members face in one direction while the front face of a third magnetic member faces in an opposite direction, and
- the ferromagnetic elements are aligned with one another.

15 14. The versatile magnetic holder of claim 13 wherein each of the magnetic members is curved along its longitudinal axis and has a convex rear face.

20 15. The versatile magnetic holder of claim 13 wherein the holder is pocket-sized.

16. A method for simultaneously holding magnetic objects, loop shaped elements and thin articles, the method comprising:
- 25 (a) providing a holder, as recited in any one of claims 7, 13, 14 or 15;
 - (b) inserting a thin article between a back side of one magnetic member and the back side of another magnetic member;
 - (c) magnetically securing a magnetic object to any one of the ferromagnetic elements; and
 - 30 (d) inserting a loop shaped element in a gap between:

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- 5
- (i) the front face of one magnetic member and the two ferromagnetic elements projecting from said front face, and
 - (ii) the back side of another magnetic member to which said ferromagnetic elements are magnetically secured.

- 10
17. A method of holding magnetic objects, loop shaped elements and thin articles, the method comprising:
- (a) providing a holder, as recited in any one of claims 7, 13, 14 or 15;
 - (b) inserting a thin article between a back side of one magnetic member and the back side of another magnetic member;
 - (c) magnetically securing a magnetic object to any one of the ferromagnetic elements; and
 - (d) inserting a loop shaped element in a gap formed by:
 - (i) the front face of one magnetic member and the two ferromagnetic elements projecting from said front face, and
 - (ii) the front face of another magnetic member and the two ferromagnetic elements projecting from said front face,
- wherein each pair of ferromagnetic elements are magnetically secured to one another.

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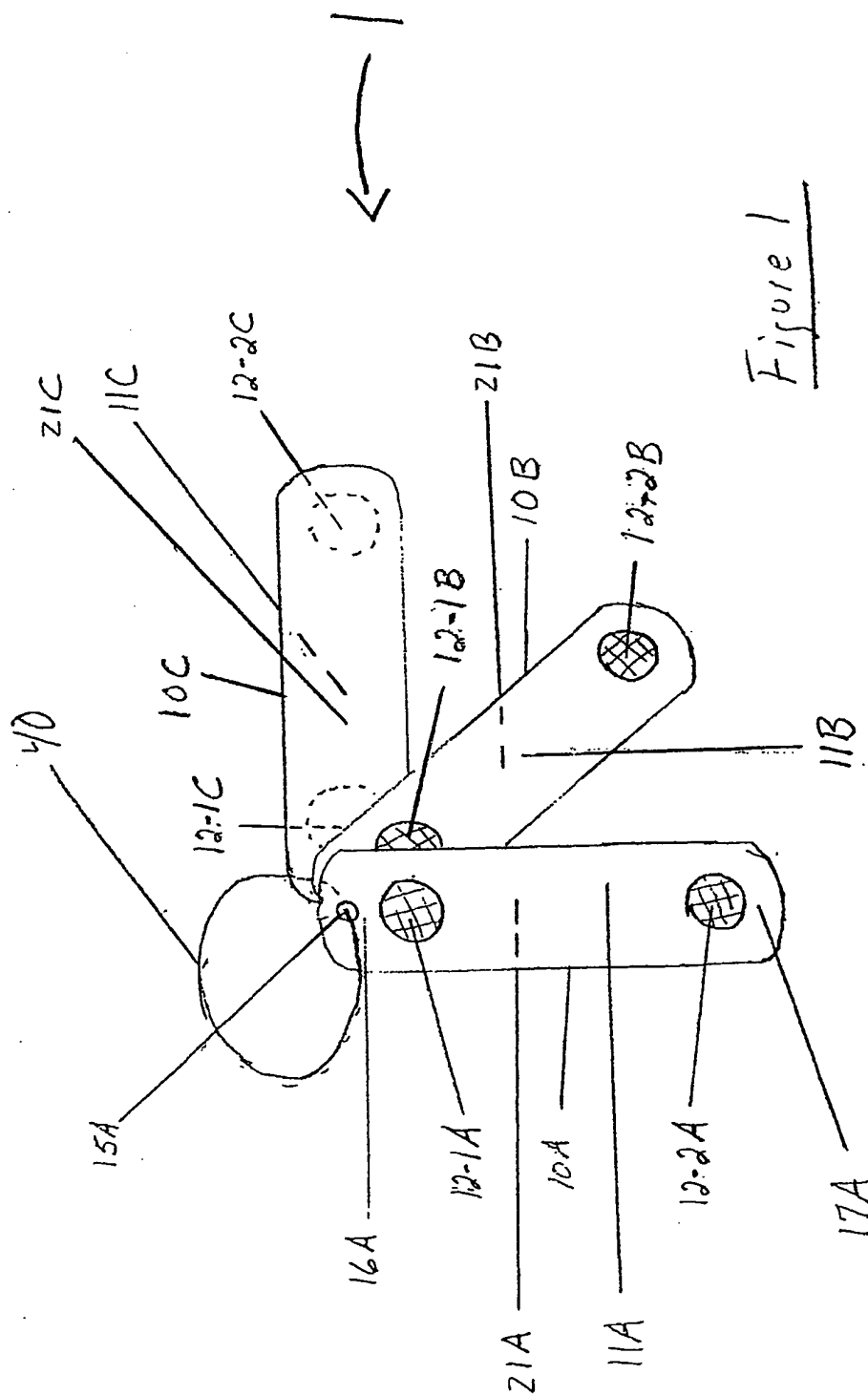


Figure 1

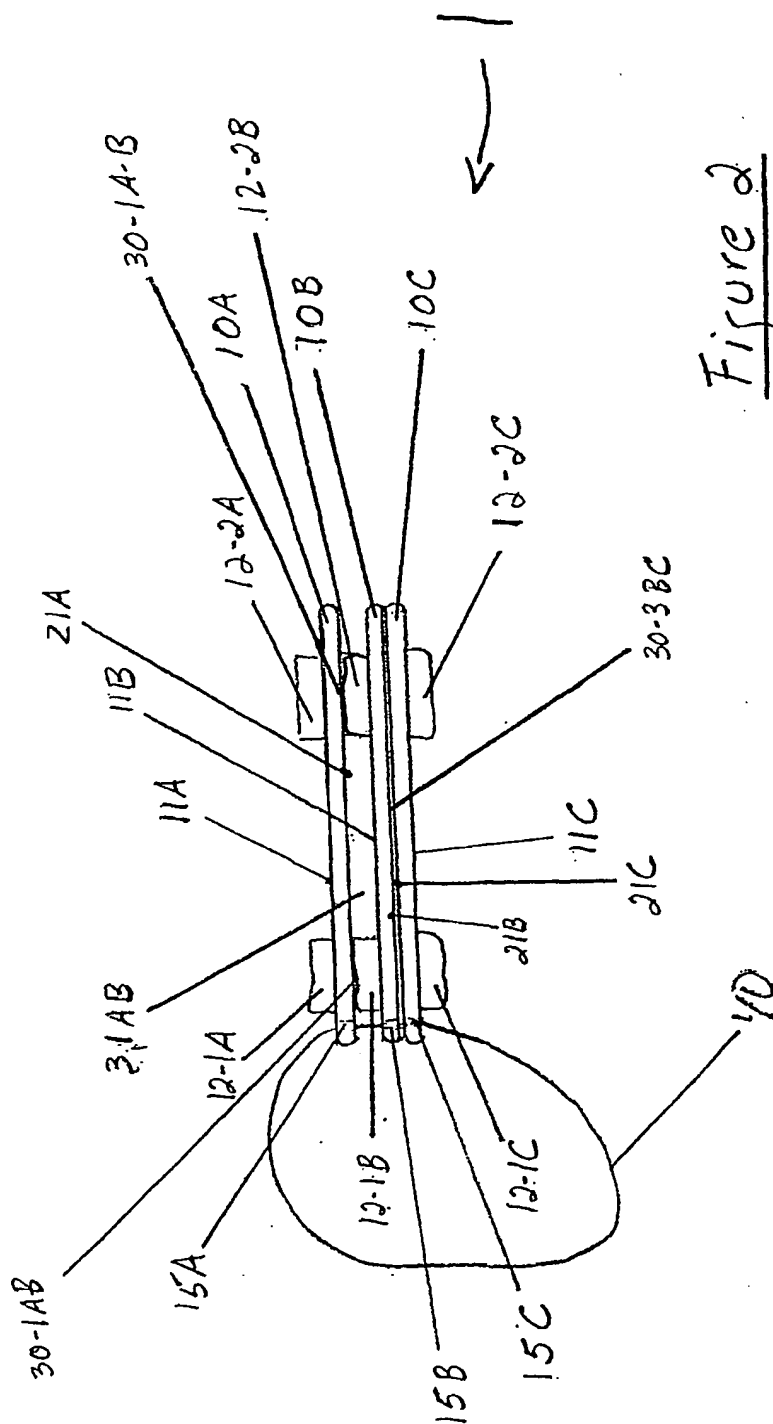


Figure 2

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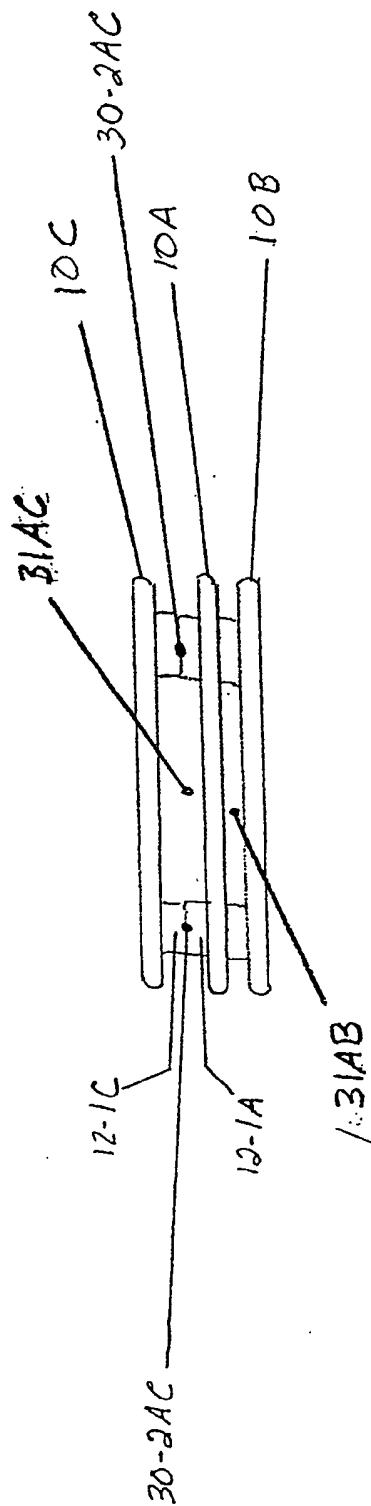
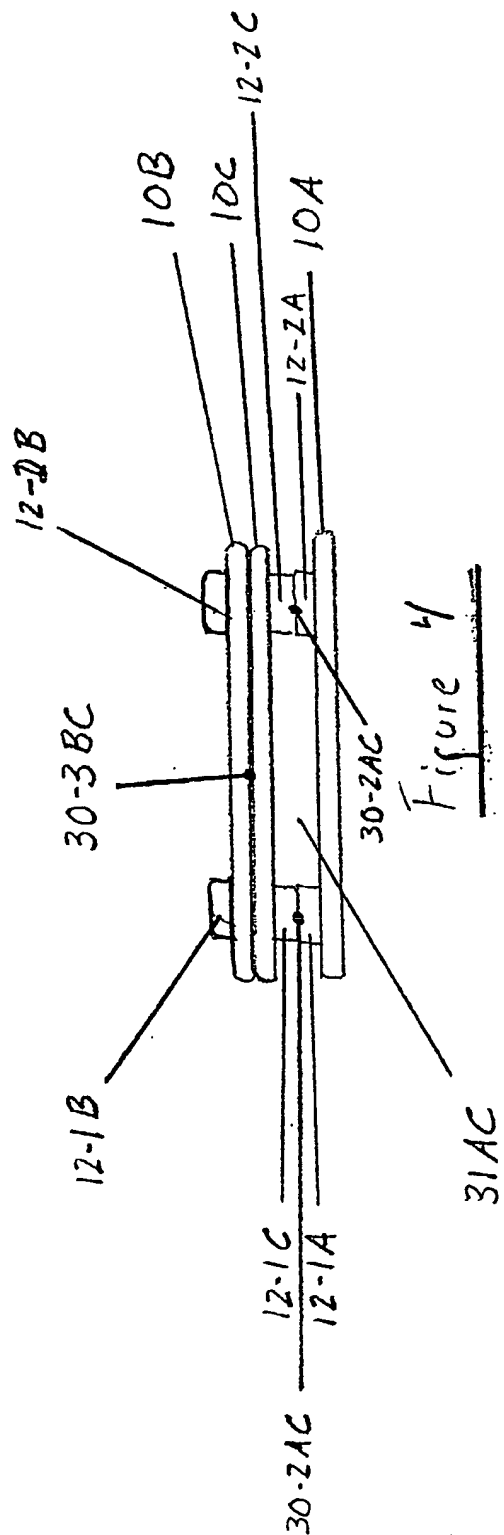


Figure 3

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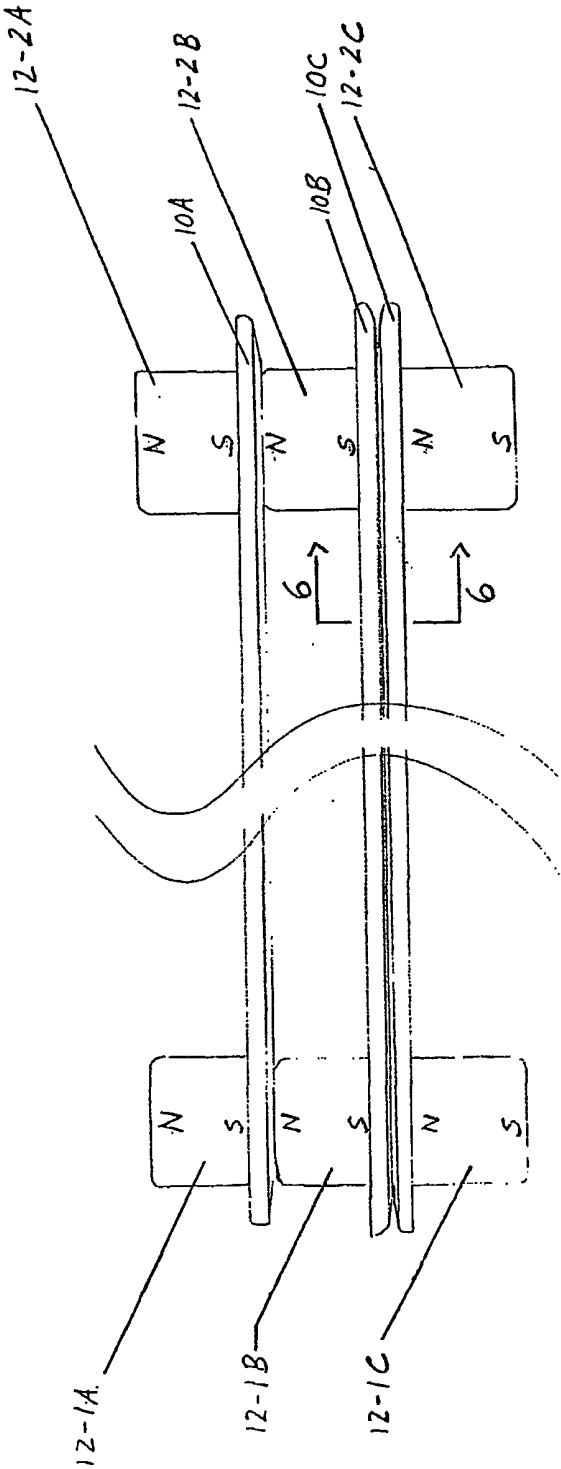


Figure 5

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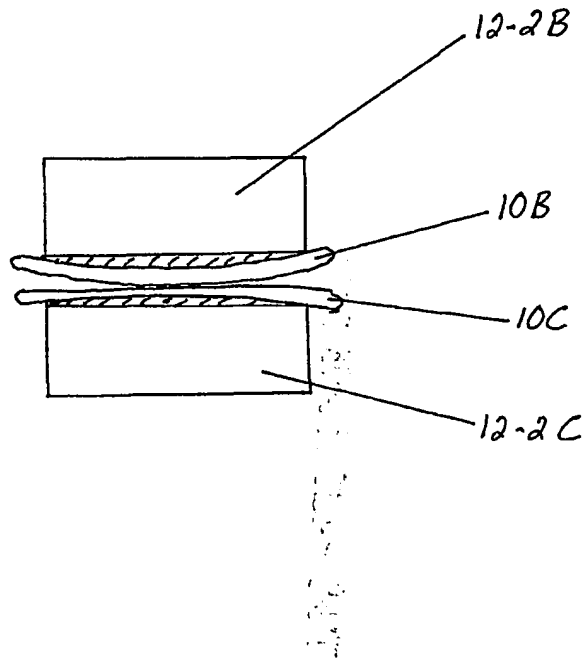


Figure 6

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